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ABSTRACT

As most psychological research and theory has overlooked the differing roles of conscious and unconscious processing in cognition, a short historical review of the topic is presented. It is argued that a functional approach to research and analysis of cognition, particularly of knowledge acquisition, may reveal that the mode of processing--conscious or unconscious--has fundamental implication for the nature of the information processed and the type of knowledge acquired. Moreover, it is suggested that the functional view may lead to a developmental model of the relationship between conscious and unconscious processing that incorporates the Piagetian and information processing approaches. A 25-item bibliography is included. (Author/RH)

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A FUNCTIONAL VIEW OF THE ROLE OF CONSCIOUS AND UNCONSCIOUS PROCESSING IN COGNITION

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ABSTRACT

The differing roles of conscious and unconscious processing in cognition have been overlooked in most psychological research and theory. A short historical review is presented. The paper proposes that a functional approach to research and analysis of cognition and in particular of knowledge acquisition may reveal that the mode of processing - conscious or unconscious - has fundamental implication for the nature of the information processed and type of knowledge acquired. Moreover, the functional view may lead to a developemental model of the relationship between conscious and unconscious processing that incorporates the Piagetian and Information Processing approaches.

A functional view of the role of conscious and unconscious processing in cognition

With the advent of the cognitive revolution, consciousness has again become a legitimate part of psychology. Nevertheless, the concept of consciousness has not found its place in modern psychology. Most theory and research on cognitive processing overlooks or takes for granted the role of consciousness and in particular neglects the distinction between conscious and unconscious cognitive processing. In this paper I am proposing that adapting a functional and a developmental view of consciousness can pave the way and facilitate in the formidable task of reincorporating consciousness into main stream psychology.

The terms 'conscious' and 'unconscious' processing have many meanings and connotations and warrant a paper in itself (see for example Klein, 1985; Roter, 1986 or the sixteen definitions of unconscious offered by J. A. Miller in 1942). For this paper it will suffice to say that we are never really consciously aware of our mental processing. Therefore, the difference between unconscious and conscious processes does not reside in our awareness of them but resides in the degree of intentionality, control and nature of processing. Conscious processes are potentially explicable, serial, rational, analytical, voluntary and reversible (in the Piagetian sense) while unconscious processes are much like Polanyi's (1959) 'tacit knowledge' which are intrinsically inarticulable, involuntary, automatic, nonrational and parallel. In the appendix there is a table taken from Pollio (1979) which summarizes some of the major differences between the

two modes of processing that may give some idea of the distinction I am trying to make.

At the turn of the century, when psychology was emerging as the new science of mental life, it was asserted, as a matter of course, that consciousness was a fundamental aspect of psychology. James wrote in 1892 in his introduction to Psychology: "The definition of psychology may best be given in the words of Professor Ladd, as the description and explanation of the states of cnosciousness as such. (p. 17, emphasis by James). Angell (1908) went so far as to define psychology as the "science of consciousness". The major difference in the approach of the psychologist of that era was between the strucuralists school as represented by Wunt and Titchner and the functionalist view as represented by James, Angell and Dewey and a litte later by Vygotsky (1925, 1934). Among the functionalists, it is important to note the work of James Baldwin, who in 1895 called for a developmental, ontogenetic approach to the study of consciousness.

At this early stage, two extreme positions could be discerned: (a) The majority who believed that most of mental life was conscious. Titchner even went so far as to equate consciousness with mentality: "Consciousness is identified with mind, and "conscious" with 'mental'. So long as mental processes are going on, consciousness is present, as soon as mental processes are in abeyance, unconsciousness sets in." (Titchner, 1909, 18) and (b) Those psychologists who insisted that conscious processing was merely a minor aspect of mental life while unconscious sensations,

unconscious ideas and unconscious judgments comprised the major part of mental processes (e.g., Helmholtz, Fechner, Lipp). Lipp, for example, in 1897 proposed that the unconscious should be "the" question of psychology and it was the general basis of all psychic life.

The Behaviorist solution to this fundamental problem was to banish consciousness completely from psychological research. Watson, one of the founders of behaviorism, was quite adamant in his rejection of consciousness as a subject for scientific psychology: "Behaviorism claims that 'consciousness' is neither a definable nor a usable concept. That it is merely another word for the 'soul' of more ancient times. The old psychology is thus dominated by a kind of subtle religious philosophy." (Watson, 1924, p.3). Therefore, it is not suprising that for the next forty years there were only a few pockets of researchers, most of them outside of the U. S., who dealt directly with consciousness. Two important centers at which the study of consciousness continued during the behaviorism hiatus was Piagetian research and Soviet research inspired by Vygotsky's theory.

The 'cognitive revolution' has brought a resurgence in interest in mentalistic notions and with it a somewhat hesitant renewal of interest in the problem of consciousness, in general, as well as the role of conscious and unconscious processing (see for example Glass, Holyoak & Santa, 1979).

At present it seems that we have studied and developed tools for understanding conscious processes such as: hypotheses testing, logical

analysis and other analytical processes. But we have not even begun to think of unconscious processes which are holistic, relational, nonanalytic, nonrational and nonpropositional. The problem is that unconscious processes are by their very nature tacit, unobservable and inexplicable, requiring circuitous and sophisticated methodologies for discovering their existence and nature. One promising approach is a functional view which can begin to delineate the situations, conditions and advantages of each mode of processing.

Adapting a functional approach to the study of consciousness is not new and was first suggested by Angell in 1908. As Angell has already noted the functional approach implies several propostions that need not necessarily be acceptable to all advocates of functionalism in psychology.

The first propostion is that consicousness is conceived of as an activity, a processes and not as a state or an entity. This idea has already been suggested by James, in his Principles of Psychology. In 1890, James defined consciousness as a mental activity. This view is also prevalent in Soviet psychology (see Leont'ev, 1978; Vygotsky, 1925, 1934).

The second proposition is that the operations of consciousness must be examined in actual life conditions. This approach is compatible with what Beilin (1985) calls contextualism. A view shared by a variety of theorists which insist that cognitive theory must reflect the effect of context on cognitive functioning. I suggest that in the research of conscious processing, one should add the notion of personal validity the

to the notion of ecological validity. As Pollio (1979), Dennett (1978) and many others have noted, an important aspect of consciousness is that it implies a first-person point of view. Therefore, it is not sufficient to study conscious processing from an objective, third-person point of view. In addition, the personal validity aspect must be incorporated within a fully contexted view of consciousness.

The third proposition is that consciousness must be viewed from a biological, evolutionary and historical perspective. This proposition can have more than one interpertation. The interpertation that I would like to put forth is as follows: The <u>biological</u> implication is twofold: (a) that consciousness has an adaptive role in cognitive functioning and (b) that any model of conscious processing must be compatible with our current knowledge of biological systems in general, and the brain and nervous system in particular. The <u>evolutionary</u> perspective implies both a phylogenetic and ontogenetic-developmental approach; and the <u>historical</u> perspective implies incorporating into our model of conscious functioning the social-historical development of culture, especially as it relates to the development of language and other semiotic functions.

I would like to expand my discussion on the developmental approach to the problem of conscious and unconscious processing. Current research and theory is diverse and it is almost impossible to try and characterize the variety of developmental theories under one heading. Nevertheless, two quite opposing prototypes of developmental views of the relationship between conscious and unconscious processing can be discerned. The first, I shall call the 'information processing' view (though there are

researchers and theorist within the information processing model who would disagree with this view and even ally themselves with the opposite view); and the second, I shall call the 'Piagetian' view.

The basic tenent of Information Processing theories is that there is a limited capacity central processor (CP) that carries out and controls the major information processing tasks. Recent research in attention, encoding, memory and skills suggests that additional processes exist which occur outside of the CP. These processes are automatic, involuntary and unconscious and most importantly do not require any or require minimal processing space in the CP. Hasher & Zacks, for instance, have proposed two different types of automatic processes: innate processes and well practiced - overlearned processes. (Hasher & Zacks, 1978, 1980). Research in skill acquisition also suggest that, initially, processing is conscious and under the control of the CP. With practice conscious control becomes unnecessary and the acivity can proceed automatically (see for example Fitts & Posner, 1967; Glass et al, 1979; Posner & Warren, 1972 or Shiffrin & Dumais, 1981). Two developmental implications may be derived from such theories: (1) that conscious, intentional processing is usually prior to the automatic, unconscious processing and (2) that unconscious processing plays only a minor role in knowledge acquisition and cognitive processing.

Piaget suggested a different role for consciousness. According to Piaget, cognizance - coming into consciousness - involves a genuine reconstruction. Piaget clearly states that the initial psychomorphism

of physical causality and subsequent attribution of operatory mechanism to the objects themselves constitutes basically unconscious inferential processes. Additional reconstruction is necessary before this knowledge becomes conceptual, conscious, and fully operational. In numerous experiments Piaget and his coworkers have shown that there is a lag between the child's successful actions and conscious knowledge of action. Their subjects initially exhibit an unconscious (sensorimotor) understanding of the tasks which guides their behavior and problem solving. Additional integration is achieved at a higher level of cognitive functioning and only then are the subjects cognizant of and able to explicate what they are doing (Piaget, 1976, 1978).

The developmental implications of the Piagetian model are: (1) that there is a profound difference in the quality of understanding as a result of the mode of processing; (2) that unconscious processing is usually prior to conscious conceptual understanding; (3) and that unconscious processing plays an important role in knowledge acquisition.

It is quite likely that both views are correct. Each dealing with different stages in knowledge acquisition. From the Piagetian model it is apparent that before any conscious processing and understanding can occur, initial intuitive, often sensorimotor, processing must take place. As Vygotsky (1934) states: "It is a general law of development that conscious awareness and mastery characterize only the higher stages of the development of any given function. ... In order for conscious awareness of

a function to be achieved, the individual must first posses that which he is to become consciously aware of. If we are to master something, we must have at our disposal that which is to be subordinate to our will."
On the other hand, from the information processing model it is apparent that once we have become proficient in something, unless additional attention or control is required, the activity will become automatic and unconscious.

To summarize, I would like to suggest that the a productive approach to studying the problem of consicousness is a functional developmental approach. The mode of processing - whether conscious or unconscious - has important ramifications for the type of knowledge that can be acquired and processed at any given level of knowledge and/or stage of cognitive development. In fact, the very nature of the understanding achieved is dependent on the mode of processing. In other words, we should reverse the order of inquiry. Instead of asking whether or not specific states or processes were conscious or unconscious the questions should be: What is the functional difference between conscious and unconscious processing? What is gained by the activation of one mode of processing over the other mode? What are the advatages and the limits of each mode of processing? In what type of situations and conditions is one type of processing more appropriate than the other? and most importantly, what are the developmental relationships between the two modes of processing and how does each develop and interact? Though we are left with more questions than answers I think that the functional approach a useful perspective for getting the answers to some of these questions.

Appendix

Some examples of the distinction between the two modes of human consciousness (Polli, 1974)

Source	'unconscious'	'conscious'
Bacon	Experience	Causal
Blackburn	Sensuous	Intellectual
Bleuler	Autistic thinking	Realistic thinking
Bruner	Left-hand	Right-hand
Deikman	Receptive	Active
Domhoff	Left (side of body)	Analytic
Frued	Primary process	Secondary process
Huserl	Unreflected	Reflected
I Ching	Dark	Light
I Ching	Space	Time
Langer	Presentational symbolism	Discursive symbolism
Lee	Nonlineal	Lineal
Levy, Sperry	Gestalt	Analytic
Luria	Simultaneous	Sequential
Many sources	Private knowledge	Public knowledge
Many sources	Metaphorical meaning	Literal meaning
Ma y sources	The Dreamer	The Doer
Many sources	Intuitive	Intellectual, analytic
Many sources	Spatial	Verbal
Maslow	B-congition	A-cognition
Neisser, Johnson-Laird	Parallel processing	Sequential processing
Oppenhiemer	Eternity, timelessness	Time, history
Polanyi	Tacit	Explicit
Schactel	Trans-schematic experience	Conventionalized experience
Semmes	Diffuse	Focal
Taylor	Divergent thinking	Convergent thinking
Wertheimer	Bling thinking	Productive thinking

BIBLIOGRAPHY

Angell, J. R. (1907). The province of functional psychology. Psychological Review, 14, 61-69.

Baldwin, J. M. (1895). Mental development in the child and the race New York. Excerpts of the book appear in R. J. Herrnstein and E. G. Boring (Eds.), A source book in the history of Psychology. Cambridge, Mass.: Harvard University Press, 1965.

Beilin, H. (1985). Current trends in cognitive development: Toward a new synthesis. Paper prepared for Cahiers de la Fondation Archives Jean Piaget, Geneva, September.

Dennett, D. C. (1978). Toward a cognitive theory of consciousness. In Brainstorms. Cambridge, Mass.: Bradford Book, MIT Press.

Fitts, P. & Posner, M. (1967). Human performance. Belmont, Calif.: Brooks/Cole.

Glass, A. R., Holyoak, K. J. & Santa, J. L. (1979). Attention and consciousness. In Cognition, Reading, Mass.: Addison-Wesley.

Hasher, L., & Zacks, R. T. (1979). Automatic and effortful processes in memory. Journal of Experimental Psychology: General, 108, 356-388.

Hasher, L., & Zacks, R. T. (1984). Automatic processing of fundamental information The case of frequency of occurrence, American Psychologist, 39(12), 1372-1388.

James, W. (1890). The principles of psychology. New York: Henry Holt.

James, W. (1892). Psychology. Greenwich, Conn.: Fawcett Publications (1963 edition).

Klein, D. B. (1984). The concept of consciousness: A survey. Lincoln, Nebraska: University of Nebraska Press.

Leont'ev, A. N. (1978). Activity, consciousness and personality. (Translated by M. A. Hall) Englewood Cliffs, N. J.: Prentice-Hall.

Lipp, T. (1897). Der Begriff des Unbewussen in der Psychologie, III. International Congress fur Psychologie in Munchen vom 4. August, 1896. Munich: J. F. Lehmann.

Miller, J. M. (1942). Definition and criteria of unconsicousness. In Unconsciousness. New York: John Wiley & Son.

Piaget, J. (1976). The grasp of consciousness. Tr. Susan Wedgwood. Cambridge: Harvard University Press.

Piaget, J. (1978). Success and understanding. Tr. Arnold J. Pomerans. London: Routledge & Kegan Paul.

Polanyi, M. (1959). Personal knowledge, Toward a post-critical philosophy, Chicago, Ill.: University of Chicago Press.

Pollio, H. R. (1979). Intuitive thinking. In G. Underwood and R. Stevens (Eds.), Aspect of consciosness, psychological issues, Vol. 1 New York: Academic Press.

Posner, W. I., & Warren, R. E. (1972). Traces, concepts and conscious construction. In A. W. Melton, & E. Martin (Eds.) Coding processes in human memory, Wash., D. C.: V. H. Winston.

Roter, A. (1986). The consept of consciousness - Vygotsky's contribution presented in the Symposia: Perspectives on Vygotsky's "Thinking and Speech". May 28, 1986.

Shiffrin, R. M. & Dumais, S. T. (1981). The development of automatism. In John R. Anderson (Ed.), Cognitive skills and their acquisition. Hillsdale, New Jersey: L. Erlbaum Associates.

Titchner, E. B. (1909). A text-book of psychology. New York: Macmillan.

Vygotsky, L. S. [1925 (1979)]. Consciousness as a problem in the psychology of behavior. Soviet Psychology, 17, 3-35.

Vygostky, L. S. [1934 (1983)]. Thinking and Speech. Translated by Norris Minick. draft.

Watson, J. B. (19130. Psychology as the behaviorist view it. Psychological Review, 20, 158-177.